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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,358

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Sung Cheol Yoon

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EXAMINER

TESKIN, FRED M

ART UNIT

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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,358	Applicant(s) YOON ET AL.	
	Examiner Fred M. Teskin	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) 19-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-18 is/are rejected.
- 7) ☒ Claim(s) 6, 8 and 9 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060706; 20061005</u> . | 6) <input type="checkbox"/> Other: ____. |

Detailed Action

Applicant's election without traverse of the invention of Group I, claims 1-18, in the reply filed on 06/25/2009 is acknowledged.

Claims 19-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 06/25/2009.

Claim 6 is objected to because of the following informalities: "claims" should read --claim-- in the first line. Appropriate correction is required.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 is ambiguous regarding chemical nature of the polar functional groups intended to be covered. The ambiguity stems from the fact that claim 3 defines the polar functional group as having at least one of O, N, P, S, Si or B *and* by a group of alternative chemical formulae. In none of the recited formulae, however, is Si present, either as an essential or optional constituent. See the various formulae and variable definitions recited in the final three subparagraphs of claim 3; Si appears in none of the formulae, nor is embraced by the definitions of formula variables R^8 – R^{13} . Thus, it is unclear how a polar functional group can have a Si atom and conform to any of the

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chemical formulae recited in claim 3. Clarification and appropriate correction are required.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 is internally inconsistent in that the definition of M in formula (4) as “a Group 10 metal” is broader in scope than the earlier recitation of a “palladium compound represented by formula (4)”. Is the claim restricted to a palladium compound or open to selection of any Group 10 metal as M in said formula? Clarification and appropriate correction are required.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 2005/019277 A1 (all references thereto being to the corresponding English language equivalent, US 2007/0123667 A1 to Oshima et al).

Oshima et al have disclosed a method for producing cycloolefin addition polymer which includes the step of addition polymerizing a cyclic olefin monomer having a polar group in presence of a catalyst mixture including species of applicants' procatalyst and cocatalyst as claimed, *viz.*, palladium 2-ethyhexanoate and tricyclohexylphosphonium pentafluorophenylborate; see Example 4, wherein the monomers being polymerized include a polycyclic olefin bearing a carboxylate substituent, which qualifies as a polar functional group within instant claims 1/3. The polymerization was carried out in the same manner as in Example 1 of Oshima et al, which details polymerization in an organic solvent (toluene; see [0308]); the polymer obtained has a molecular weight (Mw) of 156,000 (see [0322] and *cf.* instant claim 17). The principal difference between Oshima et al and the present invention resides in polymerization temperature: the specific embodiments of Oshima et al effect polymerization at 75°C instead of at 80-150° C, per claim 1 hereof. However, Oshima et al plainly teach that, in the addition polymerization of their invention, the polymerization temperature is in the range of -20 to 120°C, preferably 20 to 100°C ([0250]). The substantial overlap between the disclosed

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and claimed ranges would have led one of ordinary skill in the art to modify Oshima et al by undertaking the addition polymerization step at a temperature within the range here claimed. In cases involving overlapping ranges, it has consistently been held that even a slight overlap in range establishes a *prima facie* case of obviousness; see, e.g., *In re Woodruff*, 16 USPQ2d 1936 and *In re Geisler*, 43 USPQ2d at 1365 (acknowledging that claimed invention rendered *prima facie* obvious by prior art reference whose disclosed range (50-100 Angstroms) overlapped the claimed range (100-600 Angstroms)).

Applicant cannot rely upon the foreign priority papers to overcome the preceding rejection because a verified translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Okamoto et al is cited as pertinent to use of a multi-component catalyst including (A) a transition metal compound and (B) a compound capable of forming an ionic complex when reacted with a transition metal compound for the homopolymerization of cyclic olefin or the copolymerization of cyclic olefin and alpha-olefin without ring-opening (col. 2, lines 55+ and col. 3, lines 5-7). Okomoto et al provide an extensive list of possible choices for the compound (B), one of which is tetraphenylphosphonium tetrakis(perfluorophenyl)borate, a salt compound corresponding to formula (2) in instant claim 1 (col. 10, line 26). However, considering the large number of possible choices,

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the lack of any direction to select the phosphonium salt, and the polymerization of only non-polar cyclic olefins in all their working examples, Okamoto et al cannot be seen to provide motivation to addition-polymerize cyclic olefins having polar functional groups in the presence of a catalyst mixture including a salt compound as claimed herein.

Yoon et al is cited as pertinent to preparing cycloolefin polymer containing polar functional groups using a catalyst mixture including a first cocatalyst ii) which is an organic compound containing a Group 15 element and a second cocatalyst iii) which is capable of providing an anion and weakly coordinating to a precatalyst i). Yoon et al lack any teaching or suggestion to use a salt compound including a phosphonium cation as the cocatalyst iii). And although the cocatalyst ii) can be a phosphorus compound such as tricyclohexylphosphine, as in various working examples, Yoon et al nowhere teach or suggest use of a salt of a phosphonium cation and an anion as defined in instant claim 1 as their first or second cocatalyst. Moreover, applicants have shown (Specification, Tables 4-6) that a catalyst mixture including a salt compound corresponding to the second cocatalyst of Yoon et al is less stable in terms of polymerization yield over time, compared to the corresponding mixture including a salt compound according to the present invention.

Claims 8 and 9 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim. The claimed embodiments wherein the catalyst

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mixture is supported on an inorganic support are not disclosed nor adequately suggested in the available prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred M Teskin/

Primary Examiner, Art Unit 1796

FMTeskin/09-21-09

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